

# **Prevention Quality Indicators (PQI) Parameter Estimates, v2022**

**Prepared for:**

Agency for Healthcare Research and Quality  
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## Executive Summary

This document provides statistical parameters associated with Version 2022 Agency for Healthcare Research and Quality (AHRQ) Quality Indicators™ (QI) Prevention Quality Indicators (PQI). The parameter estimates derived for the AHRQ QI are based on analysis of the 2019 AHRQ Healthcare Cost and Utilization Project (HCUP) State Inpatient Databases (SID).<sup>1</sup>

HCUP is a family of healthcare databases and related software tools and products developed through a Federal-State-Industry partnership. HCUP includes the largest collection of longitudinal hospital care data in the United States, with all-payer, encounter-level information beginning in 1988. The SID contain all-payer, encounter-level information on inpatient discharges, including clinical and resource information typically found on a billing record, such as patient demographics, up to 30 *International Classification of Diseases, Tenth Revision, Clinical Modification/Procedural Classification System (ICD-10-CM/PCS)* diagnoses and procedures, length of stay (LOS), expected payer, admission and discharge dates and discharge disposition. In 2019, the HCUP databases represent more than 97 percent of all annual discharges in the U.S.<sup>2</sup>

The analytic dataset used to generate the risk adjustment regression models in this document consists of the same hospital discharge records that comprise the reference population for Version 2022 of the AHRQ QI software. This reference population file was limited to community hospitals and excludes rehabilitation and long-term acute care (LTAC) hospitals. Information on the type of hospital was obtained by the American Hospital Association (AHA) Annual Survey of Hospitals. AHA defines community hospitals as “all non-Federal, short-term, general, and other specialty hospitals, excluding hospital units of institutions.” Included among community hospitals are specialty hospitals such as obstetrics-gynecology, ear-nose-throat, orthopedic, and pediatric institutions. Also included are public hospitals and academic medical centers.

The 2019 HCUP SID includes information on all inpatient discharges from hospital in participating States. Discharges from all 48 participating States are used to develop risk-adjustment models for the area-level PDIs. This document is devoted to listing covariates and coefficients for risk adjustment logistic regression models. The regression coefficients are used by the prediction module to calculate risk-adjusted rates that account for differences in patient populations across areas. Covariates that are considered as potential risk adjusters include sex and age and the interaction of sex and age. Descriptions of the population age categories are provided in the Table A.1. Every covariate in every model is a binary indicator variable, coded using 0 or 1. The AHRQ QI software user does not need to manipulate or adjust these coefficients; rather this document is intended to make it transparent to the user how the risk adjusted QI rates are calculated.

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<sup>1</sup> Healthcare Cost and Utilization Project (HCUP) 2019 State Inpatient Databases (SID). Agency for Healthcare Research and Quality, Rockville, MD.

<sup>2</sup> The states included in the analysis are Alaska, Arizona, Arkansas, California, Colorado, , Delaware, District of Columbia, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

Additional information on the risk adjustment process and composite indicators may be found in Quality Indicator Empirical Methods, available on the AHRQ QI website.  
(<http://www.qualityindicators.ahrq.gov/modules/Default.aspx>)

## Acknowledgments

The AHRQ QI program would like to acknowledge the HCUP Partner organizations that participated in the HCUP SID: **Alaska** State Hospital and Nursing Home Association, **Alaska** Department of Health and Social Services, **Arizona** Department of Health Services, **Arkansas** Department of Health, **California** Department of Health Care Access and Information, **Colorado** Hospital Association, **Connecticut** Hospital Association, **Delaware** Division of Public Health, **District of Columbia** Hospital Association, **Florida** Agency for Health Care Administration, **Georgia** Hospital Association, **Hawaii** Laulima Data Alliance, a non-profit subsidiary of the Healthcare Association of Hawaii, **Hawaii** University of Hawaii at Hilo, **Illinois** Department of Public Health, **Indiana** Hospital Association, **Iowa** Hospital Association, **Kansas** Hospital Association, **Kentucky** Cabinet for Health and Family Services, **Louisiana** Department of Health, **Maine** Health Data Organization, **Maryland** Health Services Cost Review Commission, **Massachusetts** Center for Health Information and Analysis, **Michigan** Health & Hospital Association, **Minnesota** Hospital Association (provides data for Minnesota and North Dakota), **Mississippi** State Department of Health, **Missouri** Hospital Industry Data Institute, **Montana** Hospital Association, **Nebraska** Hospital Association, **Nevada** Department of Health and Human Services, **New Hampshire** Department of Health & Human Services, **New Jersey** Department of Health, **New Mexico** Department of Health, **New York** State Department of Health, **North Carolina** Department of Health and Human Services, **North Dakota** (data provided by the Minnesota Hospital Association), **Ohio** Hospital Association, **Oklahoma** State Department of Health, **Oregon** Association of Hospitals and Health Systems, **Oregon** Office of Health Analytics, **Pennsylvania** Health Care Cost Containment Council, **Rhode Island** Department of Health, **South Carolina** Revenue and Fiscal Affairs Office, **South Dakota** Association of Healthcare Organizations, **Tennessee** Hospital Association, **Texas** Department of State Health Services, **Utah** Department of Health, **Vermont** Association of Hospitals and Health Systems, **Virginia** Health Information, **Washington** State Department of Health, **West Virginia** Department of Health and Human Resources, **Wisconsin** Department of Health Services, **Wyoming** Hospital Association.

## Parameter Estimates Tables

**Table 1. Risk Adjustment Coefficients for PQI 01 – Diabetes Short-Term Complications Admission Rate**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square  | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -7.790182160  | 0.0322121343   | 58486.5797532301 | <.0001          |
| SEX       | Female           | 1  | -0.1151510963 | 0.0411343721   | 7.8365770748     | 0.0051          |
| AGECAT1   | Age 18-24        | 1  | 0.9924156441  | 0.0331195531   | 897.8799368042   | <.0001          |
| AGECAT2   | Age 25-29        | 1  | 0.8659651165  | 0.0335264823   | 667.1520397820   | <.0001          |
| AGECAT3   | Age 30-34        | 1  | 0.8226199739  | 0.0336589092   | 597.3081292569   | <.0001          |
| AGECAT4   | Age 35-39        | 1  | 0.8523787827  | 0.0336786236   | 640.5552490929   | <.0001          |
| AGECAT5   | Age 40-44        | 1  | 0.8575905819  | 0.0338140242   | 643.2299947611   | <.0001          |
| AGECAT6   | Age 45-49        | 1  | 0.8458659840  | 0.0338052958   | 626.0854914644   | <.0001          |
| AGECAT7   | Age 50-54        | 1  | 0.8351449996  | 0.0338216281   | 609.7260517159   | <.0001          |
| AGECAT8   | Age 55-59        | 1  | 0.7495620387  | 0.0338729798   | 489.6754850007   | <.0001          |
| AGECAT9   | Age 60-64        | 1  | 0.6094574925  | 0.0342639872   | 316.3814723094   | <.0001          |
| AGECAT10  | Age 65-69        | 1  | 0.4463797090  | 0.0350827108   | 161.8909615471   | <.0001          |
| AGECAT11  | Age 70-74        | 1  | 0.2957934023  | 0.0363420380   | 66.2458092240    | <.0001          |
| AGECAT12  | Age 75-79        | 1  | 0.2592492032  | 0.0384649498   | 45.4260025839    | <.0001          |
| AGECAT13  | Age 80-84        | 1  | 0.1918502849  | 0.0424149398   | 20.4591311853    | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.2163890990  | 0.0425134336   | 25.9070756699    | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 0.1167038654  | 0.0432263976   | 7.2890745615     | 0.0069          |
| FAGECAT3  | Female,Age 30-34 | 1  | -0.0787645711 | 0.0436577238   | 3.2549149744     | 0.0712          |
| FAGECAT4  | Female,Age 35-39 | 1  | -0.1589675294 | 0.0437741894   | 13.1880511538    | 0.0003          |
| FAGECAT5  | Female,Age 40-44 | 1  | -0.1424502635 | 0.0439682261   | 10.4965994729    | 0.0012          |
| FAGECAT6  | Female,Age 45-49 | 1  | -0.1324695233 | 0.0439203258   | 9.0970554392     | 0.0026          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.0311872141 | 0.0437919321   | 0.5071833055     | 0.4764          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT8  | Female,Age 55-59 | 1  | -0.0728226549 | 0.0439005789   | 2.7516457505    | 0.0972          |
| FAGECAT9  | Female,Age 60-64 | 1  | -0.0645656805 | 0.0444818649   | 2.1068688025    | 0.1466          |
| FAGECAT10 | Female,Age 65-69 | 1  | 0.0364758654  | 0.0454998156   | 0.6426757834    | 0.4227          |
| FAGECAT11 | Female,Age 70-74 | 1  | 0.0884119086  | 0.0471823227   | 3.5112592699    | 0.0610          |
| FAGECAT12 | Female,Age 75-79 | 1  | 0.1005974915  | 0.0499700059   | 4.0528030697    | 0.0441          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.0778269679  | 0.0550979238   | 1.9952152420    | 0.1578          |

c-statistic=0.57

**Table 2. Risk Adjustment Coefficients for PQI 03 – Diabetes Long-Term Complications Admission Rate**

| Parameter | Label     | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|-----------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept | 1  | -5.915627993  | 0.0126459389   | 218826.3169974210 | <.0001          |
| SEX       | Female    | 1  | -0.7134981661 | 0.0185178233   | 1484.5876835096   | <.0001          |
| AGECAT1   | Age 18-24 | 1  | -4.380613072  | 0.0459987217   | 9069.3938931883   | <.0001          |
| AGECAT2   | Age 25-29 | 1  | -2.981670929  | 0.0279347812   | 11392.7580034551  | <.0001          |
| AGECAT3   | Age 30-34 | 1  | -2.151459744  | 0.0211121691   | 10384.8621738815  | <.0001          |
| AGECAT4   | Age 35-39 | 1  | -1.568180099  | 0.0180719890   | 7529.7398426007   | <.0001          |
| AGECAT5   | Age 40-44 | 1  | -1.024288196  | 0.0163236772   | 3937.3891437908   | <.0001          |
| AGECAT6   | Age 45-49 | 1  | -0.5779804079 | 0.0150668291   | 1471.5753644522   | <.0001          |
| AGECAT7   | Age 50-54 | 1  | -0.2417440719 | 0.0144186627   | 281.1005530763    | <.0001          |
| AGECAT8   | Age 55-59 | 1  | -0.0190010497 | 0.0140130316   | 1.8386157922      | 0.1751          |
| AGECAT9   | Age 60-64 | 1  | 0.0811807407  | 0.0139844695   | 33.6987683310     | <.0001          |
| AGECAT10  | Age 65-69 | 1  | 0.1117601765  | 0.0141961889   | 61.9770094648     | <.0001          |
| AGECAT11  | Age 70-74 | 1  | 0.1075208425  | 0.0145812326   | 54.3746961680     | <.0001          |
| AGECAT12  | Age 75-79 | 1  | 0.1902160658  | 0.0152631571   | 155.3122243602    | <.0001          |
| AGECAT13  | Age 80-84 | 1  | 0.1873569675  | 0.0166705686   | 126.3103304059    | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT1  | Female,Age 18-24 | 1  | 1.4064295311  | 0.0576409579   | 595.3516669738  | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 1.1535527715  | 0.0371566785   | 963.8316099250  | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | 0.7221395071  | 0.0303219201   | 567.1903217010  | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.4313309398  | 0.0270436888   | 254.3837497399  | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.3222770387  | 0.0246032047   | 171.5834390333  | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.1228915434  | 0.0229857283   | 28.5842933643   | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.0073719683 | 0.0220558537   | 0.1117169750    | 0.7382          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.1000822668 | 0.0213782975   | 21.9163401347   | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | -0.1226296049 | 0.0213072171   | 33.1235743037   | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.0702517224 | 0.0215623358   | 10.6150573297   | 0.0011          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.0146288179 | 0.0221251117   | 0.4371671577    | 0.5085          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0515013825 | 0.0232937791   | 4.8883002048    | 0.0270          |
| FAGECAT13 | Female,Age 80-84 | 1  | -0.0003658418 | 0.0252552272   | 0.0002098379    | 0.9884          |

c-statistic=0.733

**Table 3. Risk Adjustment Coefficients for PQI 05 – Chronic Obstructive Pulmonary Disease (COPD) or Asthma in Older Adults Admission Rate**

| Parameter | Label     | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|-----------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept | 1  | -4.913933856  | 0.0076988919   | 407382.3176525110 | <.0001          |
| SEX       | Female    | 1  | -0.0268167074 | 0.0096687896   | 7.6924855377      | 0.0055          |
| AGECAT5   | Age 40-44 | 1  | -2.759245900  | 0.0167587990   | 27107.8470917018  | <.0001          |
| AGECAT6   | Age 45-49 | 1  | -2.291161378  | 0.0139901912   | 26820.3265941719  | <.0001          |
| AGECAT7   | Age 50-54 | 1  | -1.610653502  | 0.0113335497   | 20196.3243805035  | <.0001          |
| AGECAT8   | Age 55-59 | 1  | -1.046499277  | 0.0098318792   | 11329.3448077292  | <.0001          |
| AGECAT9   | Age 60-64 | 1  | -0.6948730505 | 0.0093680447   | 5501.9042946178   | <.0001          |
| AGECAT10  | Age 65-69 | 1  | -0.5250994356 | 0.0093936557   | 3124.7395778082   | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| AGECAT11  | Age 70-74        | 1  | -0.3432181550 | 0.0094751369   | 1312.1077933282 | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -0.0894792634 | 0.0097467903   | 84.2794236487   | <.0001          |
| AGECAT13  | Age 80-84        | 1  | 0.0032056001  | 0.0105731710   | 0.0919196121    | 0.7618          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.7464001980  | 0.0205423152   | 1320.2151624508 | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.7650360348  | 0.0171423904   | 1991.6866918379 | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | 0.5896949929  | 0.0141774414   | 1730.0519958830 | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | 0.4249423966  | 0.0124391633   | 1167.0186324205 | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | 0.2797797546  | 0.0119319908   | 549.8025496880  | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | 0.1885523857  | 0.0120126968   | 246.3672835893  | <.0001          |
| FAGECAT11 | Female,Age 70-74 | 1  | 0.2219456224  | 0.0120707822   | 338.0822258401  | <.0001          |
| FAGECAT12 | Female,Age 75-79 | 1  | 0.1675125863  | 0.0124254523   | 181.7483492913  | <.0001          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.1324011043  | 0.0134492169   | 96.9146026675   | <.0001          |

c-statistic=0.679

**Table 4. Risk Adjustment Coefficients for PQI 07 – Hypertension Admission Rate**

| Parameter | Label     | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|-----------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept | 1  | -6.471887535  | 0.0166818646   | 150512.5582337310 | <.0001          |
| SEX       | Female    | 1  | 0.6820216951  | 0.0189107215   | 1300.7091057745   | <.0001          |
| AGECAT1   | Age 18-24 | 1  | -3.737492465  | 0.0455140732   | 6743.2497371637   | <.0001          |
| AGECAT2   | Age 25-29 | 1  | -2.607258847  | 0.0319752501   | 6648.7560488790   | <.0001          |
| AGECAT3   | Age 30-34 | 1  | -1.836793269  | 0.0253405381   | 5253.9857656913   | <.0001          |
| AGECAT4   | Age 35-39 | 1  | -1.382692174  | 0.0227967316   | 3678.7971184850   | <.0001          |
| AGECAT5   | Age 40-44 | 1  | -0.9852945776 | 0.0213743644   | 2124.9355659284   | <.0001          |
| AGECAT6   | Age 45-49 | 1  | -0.7624213149 | 0.0204640214   | 1388.0595439646   | <.0001          |
| AGECAT7   | Age 50-54 | 1  | -0.6165269141 | 0.0199925218   | 950.9746159707    | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| AGECAT8   | Age 55-59        | 1  | -0.6035759278 | 0.0197971378   | 929.5205777120  | <.0001          |
| AGECAT9   | Age 60-64        | 1  | -0.6277762842 | 0.0201017326   | 975.3103368494  | <.0001          |
| AGECAT10  | Age 65-69        | 1  | -0.6419853063 | 0.0207805377   | 954.4135887712  | <.0001          |
| AGECAT11  | Age 70-74        | 1  | -0.6224416137 | 0.0216369905   | 827.5677019872  | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -0.4555286802 | 0.0228075471   | 398.9094183282  | <.0001          |
| AGECAT13  | Age 80-84        | 1  | -0.2176815742 | 0.0241992387   | 80.9170297480   | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | -0.5587262672 | 0.0617219460   | 81.9443393330   | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | -0.7355901457 | 0.0438350014   | 281.5981227883  | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | -0.8098347345 | 0.0338475082   | 572.4524211839  | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | -0.8777372706 | 0.0298942557   | 862.0919473825  | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | -0.8886543295 | 0.0274499298   | 1048.0529983510 | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | -0.9197323246 | 0.0259311024   | 1258.0008689881 | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.9542708742 | 0.0251741395   | 1436.9248890611 | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.9213116513 | 0.0246576107   | 1396.0826978316 | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | -0.7467240369 | 0.0246353761   | 918.7595552444  | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.5305898969 | 0.0250607252   | 448.2607192704  | <.0001          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.3163214310 | 0.0257152748   | 151.3125300899  | <.0001          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.1263133025 | 0.0266838651   | 22.4078767613   | <.0001          |
| FAGECAT13 | Female,Age 80-84 | 1  | -0.0393156043 | 0.0280049733   | 1.9708772843    | 0.1604          |

c-statistic=0.712

**Table 5. Risk Adjustment Coefficients for PQI 08 – Heart Failure Admission Rate**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -3.150629888  | 0.0032995846   | 911751.0123870140 | <.0001          |
| SEX       | Female           | 1  | -0.1758842117 | 0.0042531384   | 1710.1519060958   | <.0001          |
| AGECAT1   | Age 18-24        | 1  | -6.614828129  | 0.0340782894   | 37677.4546214539  | <.0001          |
| AGECAT2   | Age 25-29        | 1  | -5.357399287  | 0.0207681675   | 66544.4246105626  | <.0001          |
| AGECAT3   | Age 30-34        | 1  | -4.544556095  | 0.0144215954   | 99301.6172351129  | <.0001          |
| AGECAT4   | Age 35-39        | 1  | -3.905825686  | 0.0109391391   | 127485.0994550100 | <.0001          |
| AGECAT5   | Age 40-44        | 1  | -3.375021377  | 0.0090201639   | 139998.7624301420 | <.0001          |
| AGECAT6   | Age 45-49        | 1  | -2.920861002  | 0.0074124720   | 155272.8952694160 | <.0001          |
| AGECAT7   | Age 50-54        | 1  | -2.499523159  | 0.0063133842   | 156743.6247455380 | <.0001          |
| AGECAT8   | Age 55-59        | 1  | -2.157803741  | 0.0055191735   | 152853.6397461600 | <.0001          |
| AGECAT9   | Age 60-64        | 1  | -1.890215943  | 0.0052077459   | 131741.7022030540 | <.0001          |
| AGECAT10  | Age 65-69        | 1  | -1.647619786  | 0.0051252632   | 103343.1400214010 | <.0001          |
| AGECAT11  | Age 70-74        | 1  | -1.340131873  | 0.0050231175   | 71178.4285063926  | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -0.9056696793 | 0.0050036440   | 32761.7320085323  | <.0001          |
| AGECAT13  | Age 80-84        | 1  | -0.4957028597 | 0.0051256688   | 9352.8027031303   | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.0131442404  | 0.0508431388   | 0.0668353585      | 0.7960          |
| FAGECAT2  | Female,Age 25-29 | 1  | -0.1163942304 | 0.0320389883   | 13.1979146978     | 0.0003          |
| FAGECAT3  | Female,Age 30-34 | 1  | -0.2435775086 | 0.0228623018   | 113.5100885499    | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | -0.3520057661 | 0.0176589278   | 397.3478750339    | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | -0.4026844169 | 0.0145886671   | 761.9007829791    | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | -0.4126157654 | 0.0118171575   | 1219.1737149612   | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.4039302395 | 0.0098556678   | 1679.7344234177   | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.3688709332 | 0.0083372339   | 1957.5140877495   | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | -0.2756014891 | 0.0075945632   | 1316.9142993413   | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT10 | Female,Age 65-69 | 1  | -0.1899817298 | 0.0072805977   | 680.9098258213  | <.0001          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.0702191737 | 0.0069422702   | 102.3077208005  | <.0001          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0671466477 | 0.0068365612   | 96.4657754327   | <.0001          |
| FAGECAT13 | Female,Age 80-84 | 1  | -0.0215175078 | 0.0068673168   | 9.8177002251    | 0.0017          |

c-statistic=0.839

**Table 6. Risk Adjustment Coefficients for PQI 11 – Community-Acquired Pneumonia Admission Rate**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -4.148904544  | 0.0052952217   | 613901.3533772840 | <.0001          |
| SEX       | Female           | 1  | -0.2077542090 | 0.0068796609   | 911.9385940000    | <.0001          |
| AGECAT1   | Age 18-24        | 1  | -4.469478308  | 0.0198360508   | 50769.5416474837  | <.0001          |
| AGECAT2   | Age 25-29        | 1  | -4.264520812  | 0.0202616235   | 44298.8031213816  | <.0001          |
| AGECAT3   | Age 30-34        | 1  | -3.934317593  | 0.0178462614   | 48600.9020556125  | <.0001          |
| AGECAT4   | Age 35-39        | 1  | -3.705675259  | 0.0164148024   | 50963.9874424772  | <.0001          |
| AGECAT5   | Age 40-44        | 1  | -3.448561525  | 0.0152800918   | 50935.9055734537  | <.0001          |
| AGECAT6   | Age 45-49        | 1  | -3.149809982  | 0.0133365535   | 55780.3824493472  | <.0001          |
| AGECAT7   | Age 50-54        | 1  | -2.754152620  | 0.0113554879   | 58825.3347550067  | <.0001          |
| AGECAT8   | Age 55-59        | 1  | -2.384158919  | 0.0097049288   | 60351.1694647726  | <.0001          |
| AGECAT9   | Age 60-64        | 1  | -2.070545750  | 0.0089625405   | 53371.2528695655  | <.0001          |
| AGECAT10  | Age 65-69        | 1  | -1.757153000  | 0.0086082134   | 41667.0843657637  | <.0001          |
| AGECAT11  | Age 70-74        | 1  | -1.372599803  | 0.0082267424   | 27837.6179205445  | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -0.8999392565 | 0.0080872751   | 12382.8883373814  | <.0001          |
| AGECAT13  | Age 80-84        | 1  | -0.4952789017 | 0.0082733496   | 3583.7433888442   | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.2599963465  | 0.0278509080   | 87.1476682977     | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 0.3579157347  | 0.0278128560   | 165.6038420486    | <.0001          |

| Parameter | Label            | DF | Estimate     | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|--------------|----------------|-----------------|-----------------|
| FAGECAT3  | Female,Age 30-34 | 1  | 0.3662159277 | 0.0243337256   | 226.4942831145  | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.3839994797 | 0.0221792019   | 299.7570756834  | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.4253781977 | 0.0204060251   | 434.5438645289  | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.4135763097 | 0.0177912323   | 540.3799764458  | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | 0.3642980380 | 0.0152328211   | 571.9433095397  | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | 0.2984522947 | 0.0130664752   | 521.7145527463  | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | 0.2381314626 | 0.0120955662   | 387.5976662139  | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | 0.1469721479 | 0.0116926319   | 157.9957932286  | <.0001          |
| FAGECAT11 | Female,Age 70-74 | 1  | 0.1225791539 | 0.0111447824   | 120.9734458732  | <.0001          |
| FAGECAT12 | Female,Age 75-79 | 1  | 0.0621745071 | 0.0109373764   | 32.3145704204   | <.0001          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.0261478255 | 0.0111054084   | 5.5437302238    | 0.0185          |

c-statistic=0.806

**Table 7. Risk Adjustment Coefficients for PQI 12 – Urinary Tract Infection Admission Rate**

| Parameter | Label     | DF | Estimate     | Standard Error | Wald Chi-Square  | Pr > Chi-Square |
|-----------|-----------|----|--------------|----------------|------------------|-----------------|
| INTERCEPT | Intercept | 1  | -4.679239271 | 0.0068595269   | 46531.2137707010 | <.0001          |
| SEX       | Female    | 1  | 0.5799246176 | 0.0078789029   | 5417.6581566456  | <.0001          |
| AGECAT1   | Age 18-24 | 1  | -5.274196133 | 0.0378865019   | 19379.5431341346 | <.0001          |
| AGECAT2   | Age 25-29 | 1  | -4.942731427 | 0.0364345716   | 18403.7654665526 | <.0001          |
| AGECAT3   | Age 30-34 | 1  | -4.596810445 | 0.0316871688   | 21044.8733923836 | <.0001          |
| AGECAT4   | Age 35-39 | 1  | -4.389446999 | 0.0293171252   | 22416.9671364703 | <.0001          |
| AGECAT5   | Age 40-44 | 1  | -4.210508124 | 0.0281875883   | 22312.7540700829 | <.0001          |
| AGECAT6   | Age 45-49 | 1  | -3.849042975 | 0.0236415960   | 26506.4726752488 | <.0001          |
| AGECAT7   | Age 50-54 | 1  | -3.493408871 | 0.0201421391   | 30080.6803205586 | <.0001          |
| AGECAT8   | Age 55-59 | 1  | -3.096290362 | 0.0166048340   | 34770.7683275273 | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square  | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|------------------|-----------------|
| AGECAT9   | Age 60-64        | 1  | -2.625475334  | 0.0141926111   | 34220.8886043346 | <.0001          |
| AGECAT10  | Age 65-69        | 1  | -2.151030864  | 0.0127571487   | 28430.6017171695 | <.0001          |
| AGECAT11  | Age 70-74        | 1  | -1.632594819  | 0.0115778407   | 19883.9052422648 | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -1.097961513  | 0.0111334705   | 9725.5262811398  | <.0001          |
| AGECAT13  | Age 80-84        | 1  | -0.5626994151 | 0.0109496544   | 2640.9009037917  | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 1.6524816642  | 0.0400794810   | 1699.9224937810  | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 1.3569863299  | 0.0391839290   | 1199.3197442957  | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | 1.0951437237  | 0.0346864733   | 996.8319405296   | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.9568452033  | 0.0324044814   | 871.9131307761   | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.8938271052  | 0.0312924133   | 815.8849566072   | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.6176993847  | 0.0269316024   | 526.0535430184   | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | 0.4181631792  | 0.0234349692   | 318.3924801561   | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | 0.2053819054  | 0.0197392999   | 108.2582158809   | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | 0.0391648329  | 0.0171183354   | 5.2344311310     | 0.0221          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.0287680911 | 0.0153913598   | 3.4935592011     | 0.0616          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.0028067918 | 0.0138331576   | 0.0411697039     | 0.8392          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0071046289 | 0.0132006109   | 0.2896641424     | 0.5904          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.0012161786  | 0.0128523550   | 0.0089542512     | 0.9246          |

c-statistic=0.838

**Table 8. Risk Adjustment Coefficients for PQI 14 – Uncontrolled Diabetes Admission Rate**

| Parameter | Label                   | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|-------------------------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept               | 1  | -6.517985899  | 0.0170696644   | 145806.4944700270 | <.0001          |
| SEX       | Female                  | 1  | -0.2414938951 | 0.0223556421   | 116.6911761654    | <.0001          |
| AGECAT1   | 18 <= Age <= 24         | 1  | -3.024866624  | 0.0348173689   | 7547.8031067287   | <.0001          |
| AGECAT2   | 25 <= Age <= 29         | 1  | -2.494245821  | 0.0314221658   | 6300.9535124974   | <.0001          |
| AGECAT3   | 30 <= Age <= 34         | 1  | -2.142932042  | 0.0284392973   | 5677.7867177776   | <.0001          |
| AGECAT4   | 35 <= Age <= 39         | 1  | -1.915135761  | 0.0268655848   | 5081.6708802089   | <.0001          |
| AGECAT5   | 40 <= Age <= 44         | 1  | -1.603947168  | 0.0252653390   | 4030.2302629608   | <.0001          |
| AGECAT6   | 45 <= Age <= 49         | 1  | -1.357170640  | 0.0236190011   | 3301.7627259574   | <.0001          |
| AGECAT7   | 50 <= Age <= 54         | 1  | -1.160214033  | 0.0225875481   | 2638.3842660553   | <.0001          |
| AGECAT8   | 55 <= Age <= 59         | 1  | -1.016299252  | 0.0217040809   | 2192.6050606046   | <.0001          |
| AGECAT9   | 60 <= Age <= 64         | 1  | -0.8842632824 | 0.0214836028   | 1694.1386648655   | <.0001          |
| AGECAT10  | 65 <= Age <= 69         | 1  | -0.6972771742 | 0.0214773733   | 1054.0193057702   | <.0001          |
| AGECAT11  | 70 <= Age <= 74         | 1  | -0.5066717903 | 0.0216446462   | 547.9645559521    | <.0001          |
| AGECAT12  | 75 <= Age <= 79         | 1  | -0.2308707796 | 0.0222214765   | 107.9424107798    | <.0001          |
| AGECAT13  | Age 80-84               | 1  | -0.0280716763 | 0.0236158678   | 1.4129567737      | 0.2346          |
| FAGECAT1  | Female, 18 <= Age <= 24 | 1  | 0.3309462891  | 0.0479768343   | 47.5830038655     | <.0001          |
| FAGECAT2  | Female, 25 <= Age <= 29 | 1  | 0.1603926061  | 0.0445405932   | 12.9675130779     | 0.0003          |
| FAGECAT3  | Female, 30 <= Age <= 34 | 1  | -0.0434404579 | 0.0415090732   | 1.0952233997      | 0.2953          |
| FAGECAT4  | Female, 35 <= Age <= 39 | 1  | 0.0029007004  | 0.0384512744   | 0.0056909436      | 0.9399          |
| FAGECAT5  | Female, 40 <= Age <= 44 | 1  | -0.0273496027 | 0.0360010680   | 0.5771268428      | 0.4474          |
| FAGECAT6  | Female, 45 <= Age <= 49 | 1  | 0.0087616528  | 0.0330953914   | 0.0700869296      | 0.7912          |
| FAGECAT7  | Female, 50 <= Age <= 54 | 1  | 0.0528873210  | 0.0312267057   | 2.8684732099      | 0.0903          |
| FAGECAT8  | Female, 55 <= Age <= 59 | 1  | 0.0564315623  | 0.0297373429   | 3.6011385126      | 0.0577          |
| FAGECAT9  | Female, 60 <= Age <= 64 | 1  | 0.0936992608  | 0.0291798608   | 10.3111213549     | 0.0013          |

| Parameter | Label                   | DF | Estimate     | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|-------------------------|----|--------------|----------------|-----------------|-----------------|
| FAGECAT10 | Female, 65 <= Age <= 69 | 1  | 0.1279984988 | 0.0289511294   | 19.5469378671   | <.0001          |
| FAGECAT11 | Female, 70 <= Age <= 74 | 1  | 0.1465618769 | 0.0290685777   | 25.4211077857   | <.0001          |
| FAGECAT12 | Female, 75 <= Age <= 79 | 1  | 0.1284936038 | 0.0297596713   | 18.6426118796   | <.0001          |
| FAGECAT13 | Female, 80 <= Age <= 84 | 1  | 0.0670188606 | 0.0316173231   | 4.4930772340    | 0.0340          |

c-statistic=0.712

**Table 9. Risk Adjustment Coefficients for PQI 15 – Asthma in Younger Adults Admission Rate**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -8.470389861  | 0.0211357840   | 160609.0727778290 | <.0001          |
| SEX       | Female           | 1  | 0.8884473903  | 0.0251246669   | 1250.4398488036   | <.0001          |
| AGECAT1   | Age 18-24        | 1  | -0.2624271047 | 0.0292649811   | 80.4120033590     | <.0001          |
| AGECAT2   | Age 25-29        | 1  | -0.1342234746 | 0.0301623307   | 19.8028254518     | <.0001          |
| AGECAT3   | Age 30-34        | 1  | -0.0422041080 | 0.0298804417   | 1.9949656621      | 0.1578          |
| FAGECAT1  | Female,Age 18-24 | 1  | -0.2597617557 | 0.0356322808   | 53.1450936953     | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | -0.2273604859 | 0.0366607129   | 38.4616724920     | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | -0.1449798959 | 0.0359873128   | 16.2299331104     | <.0001          |

c-statistic=0.612

**Table 10. Risk Adjustment Coefficients for PQI 16 – Lower-Extremity Amputation Among Patients with Diabetes**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square  | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -7.158322538  | 0.0234947079   | 92828.7332865782 | <.0001          |
| SEX       | Female           | 1  | -1.039581713  | 0.0377977077   | 756.4606442866   | <.0001          |
| AGECAT1   | Age 18-24        | 1  | -5.940836972  | 0.1811327664   | 1075.7249190705  | <.0001          |
| AGECAT2   | Age 25-29        | 1  | -3.882580923  | 0.0764401166   | 2579.8731429381  | <.0001          |
| AGECAT3   | Age 30-34        | 1  | -2.667625776  | 0.0470155899   | 3219.3339563177  | <.0001          |
| AGECAT4   | Age 35-39        | 1  | -1.769631991  | 0.0354656341   | 2489.7197448615  | <.0001          |
| AGECAT5   | Age 40-44        | 1  | -1.076235760  | 0.0306643614   | 1231.8192541932  | <.0001          |
| AGECAT6   | Age 45-49        | 1  | -0.5180918771 | 0.0277577169   | 348.3742783511   | <.0001          |
| AGECAT7   | Age 50-54        | 1  | -0.1103941989 | 0.0264077059   | 17.4755621329    | <.0001          |
| AGECAT8   | Age 55-59        | 1  | 0.1425260973  | 0.0256723991   | 30.8216494057    | <.0001          |
| AGECAT9   | Age 60-64        | 1  | 0.3017422527  | 0.0255087285   | 139.9247804690   | <.0001          |
| AGECAT10  | Age 65-69        | 1  | 0.3331315792  | 0.0258284409   | 166.3547575353   | <.0001          |
| AGECAT11  | Age 70-74        | 1  | 0.2926852575  | 0.0265165033   | 121.8341925356   | <.0001          |
| AGECAT12  | Age 75-79        | 1  | 0.3485435600  | 0.0276967005   | 158.3645811140   | <.0001          |
| AGECAT13  | Age 80-84        | 1  | 0.3106286862  | 0.0301966329   | 105.8195918704   | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.5420702214  | 0.2986564621   | 3.2943312622     | 0.0695          |
| FAGECAT2  | Female,Age 25-29 | 1  | 0.3843583984  | 0.1317503065   | 8.5107822951     | 0.0035          |
| FAGECAT3  | Female,Age 30-34 | 1  | 0.4158519140  | 0.0791317017   | 27.6169936035    | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.2373928451  | 0.0609454623   | 15.1723376435    | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.2105596959  | 0.0519360385   | 16.4366326447    | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.0407669416  | 0.0471942974   | 0.7461690171     | 0.3877          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.0325612820 | 0.0445644725   | 0.5338576237     | 0.4650          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.0794617368 | 0.0429651266   | 3.4204552625     | 0.0644          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT9  | Female,Age 60-64 | 1  | -0.1331249475 | 0.0426657662   | 9.7355345248    | 0.0018          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.0567575455 | 0.0429929175   | 1.7428233839    | 0.1868          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.0288637084 | 0.0442606060   | 0.4252746989    | 0.5143          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0391644059 | 0.0464242587   | 0.7116937147    | 0.3989          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.0302463428  | 0.0501497709   | 0.3637540478    | 0.5464          |

c-statistic=0.78

**Table 11. Risk Adjustment Coefficients for PQI 90 – Overall Composite**

| Parameter | Label     | DF | Estimate      | Standard Error | Wald Chi-Square    | Pr > Chi-Square |
|-----------|-----------|----|---------------|----------------|--------------------|-----------------|
| INTERCEPT | Intercept | 1  | -2.450808597  | 0.0024209620   | 1024808.7929943300 | <.0001          |
| SEX       | Female    | 1  | -0.0380219035 | 0.0030436451   | 156.0557222859     | <.0001          |
| AGECAT1   | Age 18-24 | 1  | -3.921664657  | 0.0066822951   | 344420.9913860020  | <.0001          |
| AGECAT2   | Age 25-29 | 1  | -3.744049132  | 0.0069003109   | 294405.3920261290  | <.0001          |
| AGECAT3   | Age 30-34 | 1  | -3.440447422  | 0.0062018357   | 307743.8160131550  | <.0001          |
| AGECAT4   | Age 35-39 | 1  | -3.125592836  | 0.0055467495   | 317532.1438451080  | <.0001          |
| AGECAT5   | Age 40-44 | 1  | -2.746463684  | 0.0049681411   | 305604.5946231770  | <.0001          |
| AGECAT6   | Age 45-49 | 1  | -2.408297679  | 0.0043715431   | 303494.4924187500  | <.0001          |
| AGECAT7   | Age 50-54 | 1  | -2.054830686  | 0.0039017482   | 277353.4688019440  | <.0001          |
| AGECAT8   | Age 55-59 | 1  | -1.758341320  | 0.0035369764   | 247139.4309814570  | <.0001          |
| AGECAT9   | Age 60-64 | 1  | -1.531932980  | 0.0034106194   | 201749.7579944540  | <.0001          |
| AGECAT10  | Age 65-69 | 1  | -1.345904875  | 0.0034161485   | 155222.7104182650  | <.0001          |
| AGECAT11  | Age 70-74 | 1  | -1.105278702  | 0.0034187248   | 104523.8308198890  | <.0001          |
| AGECAT12  | Age 75-79 | 1  | -0.7400485337 | 0.0034779097   | 45277.6428249468   | <.0001          |
| AGECAT13  | Age 80-84 | 1  | -0.4068386910 | 0.0036444183   | 12462.0087807762   | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT1  | Female,Age 18-24 | 1  | 0.3832435683  | 0.0087656566   | 1911.5287893509 | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 0.2998691003  | 0.0091984924   | 1062.7475708404 | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | 0.1346926471  | 0.0084999287   | 251.1060722232  | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.0173969124  | 0.0077255513   | 5.0709039741    | 0.0243          |
| FAGECAT5  | Female,Age 40-44 | 1  | -0.0265216917 | 0.0069242316   | 14.6709850545   | 0.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | -0.0790677393 | 0.0060880127   | 168.6737653008  | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.1080508708 | 0.0053958143   | 400.9983148830  | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.1358413971 | 0.0048347266   | 789.4423923503  | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | -0.1346372808 | 0.0046163569   | 850.6127761244  | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.1137822502 | 0.0045850354   | 615.8339934417  | <.0001          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.0294158842 | 0.0045223457   | 42.3093442409   | <.0001          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0311340900 | 0.0045693868   | 46.4254908922   | <.0001          |
| FAGECAT13 | Female,Age 80-84 | 1  | -0.0042066438 | 0.0047289183   | 0.7913121806    | 0.3737          |

c-statistic=0.773

**Table 12. Risk Adjustment Coefficients for PQI 91 – Prevention Quality Acute Composite**

| Parameter | Label     | DF | Estimate     | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|-----------|----|--------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept | 1  | -3.674752064 | 0.0042165375   | 759528.6192432960 | <.0001          |
| SEX       | Female    | 1  | 0.1624249406 | 0.0051331361   | 1001.2438836189   | <.0001          |
| AGECAT1   | Age 18-24 | 1  | -4.710039170 | 0.0175246059   | 72235.8053191680  | <.0001          |
| AGECAT2   | Age 25-29 | 1  | -4.477271969 | 0.0176727997   | 64182.4428657237  | <.0001          |
| AGECAT3   | Age 30-34 | 1  | -4.143379980 | 0.0155124329   | 71342.7251093064  | <.0001          |
| AGECAT4   | Age 35-39 | 1  | -3.919615500 | 0.0142800326   | 75340.5060717332  | <.0001          |
| AGECAT5   | Age 40-44 | 1  | -3.679831613 | 0.0133777689   | 75663.8639786249  | <.0001          |
| AGECAT6   | Age 45-49 | 1  | -3.367140862 | 0.0115635233   | 84789.5267924466  | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square  | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|------------------|-----------------|
| AGECAT7   | Age 50-54        | 1  | -2.980265915  | 0.0098267439   | 91979.4391611882 | <.0001          |
| AGECAT8   | Age 55-59        | 1  | -2.604048801  | 0.0083137197   | 98108.6902067772 | <.0001          |
| AGECAT9   | Age 60-64        | 1  | -2.252659449  | 0.0075416893   | 89218.2713733062 | <.0001          |
| AGECAT10  | Age 65-69        | 1  | -1.895549983  | 0.0071256827   | 70764.8390799569 | <.0001          |
| AGECAT11  | Age 70-74        | 1  | -1.470169662  | 0.0067140789   | 47947.0651453050 | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -0.9760894121 | 0.0065598236   | 22140.8804580163 | <.0001          |
| AGECAT13  | Age 80-84        | 1  | -0.5243954412 | 0.0066293771   | 6257.0894936687  | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.8589349476  | 0.0206104392   | 1736.7849739488  | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 0.7501352827  | 0.0210829058   | 1265.9549505550  | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | 0.5994502073  | 0.0188688223   | 1009.2915586808  | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.5231381015  | 0.0175131312   | 892.2881048390   | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.4881617043  | 0.0164584266   | 879.7327955874   | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.3686214265  | 0.0144593584   | 649.9247942056   | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | 0.2488592058  | 0.0124859712   | 397.2489529403   | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | 0.1314526049  | 0.0106767259   | 151.5870867549   | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | 0.0528430823  | 0.0097209208   | 29.5502717046    | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.0076536777 | 0.0091871202   | 0.6940352703     | 0.4048          |
| FAGECAT11 | Female,Age 70-74 | 1  | 0.0104053877  | 0.0085742351   | 1.4727388800     | 0.2249          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0123697873 | 0.0083216950   | 2.2095349691     | 0.1372          |
| FAGECAT13 | Female,Age 80-84 | 1  | -0.0014679351 | 0.0083076995   | 0.0312213835     | 0.8597          |

c-statistic=0.817

**Table 13. Risk Adjustment Coefficients for PQI 92 – Prevention Quality Chronic Composite**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -2.849284583  | 0.0028786254   | 979718.5924078650 | <.0001          |
| SEX       | Female           | 1  | -0.1436037978 | 0.0036860127   | 1517.8127559319   | <.0001          |
| AGECAT1   | Age 18-24        | 1  | -3.667163353  | 0.0072845828   | 253425.9840771750 | <.0001          |
| AGECAT2   | Age 25-29        | 1  | -3.498440497  | 0.0075437422   | 215067.7582820380 | <.0001          |
| AGECAT3   | Age 30-34        | 1  | -3.200135200  | 0.0068149819   | 220499.3120599000 | <.0001          |
| AGECAT4   | Age 35-39        | 1  | -2.870754379  | 0.0060835748   | 222676.4885825760 | <.0001          |
| AGECAT5   | Age 40-44        | 1  | -2.472153210  | 0.0054377174   | 206689.0621070570 | <.0001          |
| AGECAT6   | Age 45-49        | 1  | -2.131143636  | 0.0048185660   | 195609.4425446740 | <.0001          |
| AGECAT7   | Age 50-54        | 1  | -1.782832668  | 0.0043455631   | 168317.4146626980 | <.0001          |
| AGECAT8   | Age 55-59        | 1  | -1.498547510  | 0.0039869733   | 141271.4438960440 | <.0001          |
| AGECAT9   | Age 60-64        | 1  | -1.293116077  | 0.0038756386   | 111323.9164985220 | <.0001          |
| AGECAT10  | Age 65-69        | 1  | -1.140978487  | 0.0039092293   | 85186.8631280413  | <.0001          |
| AGECAT11  | Age 70-74        | 1  | -0.9466938669 | 0.0039504675   | 57427.7946659778  | <.0001          |
| AGECAT12  | Age 75-79        | 1  | -0.6248166043 | 0.0040501537   | 23799.1868406604  | <.0001          |
| AGECAT13  | Age 80-84        | 1  | -0.3412107115 | 0.0042808359   | 6353.1358785496   | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.3265703251  | 0.0098695870   | 1094.8521575281   | <.0001          |
| FAGECAT2  | Female,Age 25-29 | 1  | 0.2411042878  | 0.0104056825   | 536.8694891098    | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | 0.0637834162  | 0.0097020790   | 43.2201169672     | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | -0.0491902285 | 0.0087880881   | 31.3306115050     | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | -0.0689507238 | 0.0078023954   | 78.0947329760     | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | -0.0978846562 | 0.0068605521   | 203.5687501243    | <.0001          |
| FAGECAT7  | Female,Age 50-54 | 1  | -0.1074142800 | 0.0061116497   | 308.8923417645    | <.0001          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.1216139567 | 0.0055263416   | 484.2742617187    | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT9  | Female,Age 60-64 | 1  | -0.1127320329 | 0.0053171826   | 449.5018959667  | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.0856103575 | 0.0053211255   | 258.8484816171  | <.0001          |
| FAGECAT11 | Female,Age 70-74 | 1  | 0.0017722948  | 0.0053052582   | 0.1115986312    | 0.7383          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0055839319 | 0.0054101786   | 1.0652634098    | 0.3020          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.0130909607  | 0.0056545029   | 5.3598689593    | 0.0206          |

c-statistic=0.76

**Table 14. Risk Adjustment Coefficients for PQI 93 – PQI Diabetes Composite**

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square   | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-------------------|-----------------|
| INTERCEPT | Intercept        | 1  | -5.324632410  | 0.0094309222   | 318765.2263330030 | <.0001          |
| SEX       | Female           | 1  | -0.5017450679 | 0.0130845386   | 1470.4470866659   | <.0001          |
| AGECAT1   | Age 18-24        | 1  | -1.381855795  | 0.0119609940   | 13347.2226071079  | <.0001          |
| AGECAT2   | Age 25-29        | 1  | -1.359822699  | 0.0125284479   | 11780.6710834380  | <.0001          |
| AGECAT3   | Age 30-34        | 1  | -1.208636132  | 0.0122773677   | 9691.2684456734   | <.0001          |
| AGECAT4   | Age 35-39        | 1  | -0.9874403522 | 0.0118622496   | 6929.2722796867   | <.0001          |
| AGECAT5   | Age 40-44        | 1  | -0.7229763644 | 0.0115202230   | 3938.4599183303   | <.0001          |
| AGECAT6   | Age 45-49        | 1  | -0.4618622378 | 0.0110510011   | 1746.7134542937   | <.0001          |
| AGECAT7   | Age 50-54        | 1  | -0.2339201591 | 0.0107422396   | 474.1826153526    | <.0001          |
| AGECAT8   | Age 55-59        | 1  | -0.0902403404 | 0.0105210764   | 73.5666702218     | <.0001          |
| AGECAT9   | Age 60-64        | 1  | -0.0225243252 | 0.0105318179   | 4.5740077938      | 0.0325          |
| AGECAT10  | Age 65-69        | 1  | 0.0011522438  | 0.0107133825   | 0.0115673936      | 0.9144          |
| AGECAT11  | Age 70-74        | 1  | 0.0062763683  | 0.0110160436   | 0.3246127309      | 0.5688          |
| AGECAT12  | Age 75-79        | 1  | 0.1095910989  | 0.0115316266   | 90.3169830989     | <.0001          |
| AGECAT13  | Age 80-84        | 1  | 0.1386725729  | 0.0125642714   | 121.8166153327    | <.0001          |
| FAGECAT1  | Female,Age 18-24 | 1  | 0.6240344813  | 0.0165969121   | 1413.7173543178   | <.0001          |

| Parameter | Label            | DF | Estimate      | Standard Error | Wald Chi-Square | Pr > Chi-Square |
|-----------|------------------|----|---------------|----------------|-----------------|-----------------|
| FAGECAT2  | Female,Age 25-29 | 1  | 0.5520193979  | 0.0175150301   | 993.3147904894  | <.0001          |
| FAGECAT3  | Female,Age 30-34 | 1  | 0.3398853662  | 0.0175356480   | 375.6827864960  | <.0001          |
| FAGECAT4  | Female,Age 35-39 | 1  | 0.2158584456  | 0.0170901571   | 159.5313273201  | <.0001          |
| FAGECAT5  | Female,Age 40-44 | 1  | 0.1682733156  | 0.0165945648   | 102.8250123328  | <.0001          |
| FAGECAT6  | Female,Age 45-49 | 1  | 0.0601283280  | 0.0159617002   | 14.1905737638   | 0.0002          |
| FAGECAT7  | Female,Age 50-54 | 1  | 0.0081482062  | 0.0154792374   | 0.2770925824    | 0.5986          |
| FAGECAT8  | Female,Age 55-59 | 1  | -0.0834838132 | 0.0151595873   | 30.3270242608   | <.0001          |
| FAGECAT9  | Female,Age 60-64 | 1  | -0.1110362891 | 0.0151771637   | 53.5240100124   | <.0001          |
| FAGECAT10 | Female,Age 65-69 | 1  | -0.0554652615 | 0.0153885522   | 12.9911203843   | 0.0003          |
| FAGECAT11 | Female,Age 70-74 | 1  | -0.0044234594 | 0.0158066465   | 0.0783149367    | 0.7796          |
| FAGECAT12 | Female,Age 75-79 | 1  | -0.0137686307 | 0.0165735413   | 0.6901617231    | 0.4061          |
| FAGECAT13 | Female,Age 80-84 | 1  | 0.0138407790  | 0.0179579307   | 0.5940301472    | 0.4409          |

c-statistic=0.638

## Appendix: Additional Tables

Table A.1. Population Age Categories

| Age Category | Range     |
|--------------|-----------|
| 1            | 18 - 24   |
| 2            | 25 - 29   |
| 3            | 30 - 34   |
| 4            | 35 – 39   |
| 5            | 40 - 44   |
| 6            | 45 - 49   |
| 7            | 50 - 54   |
| 8            | 55 - 59   |
| 9            | 60 - 64   |
| 10           | 65 - 69   |
| 11           | 70 - 74   |
| 12           | 75 - 79   |
| 13           | 80 - 84   |
| 14           | 85 - high |